



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

MILLER ET AL

US010444

Appln. No. 09/919,464 /

Group Art Unit 3737

Filed: July 31, 2001

Examiner:

TRANSESOPHAGEAL AND TRANSNASAL, TRANSESOPHAGEAL ULTRASOUND IMAGING SYSTEMS

Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

PEITITION UNDER 37 CFR 1.17(h)  
AND  
AMENDMENT

Sir:

In response to the Notice of Omitted Items dated on September 20, 2001, Applicants petitions for reconsideration and amends the above-identified application as follows:

IN THE SPECIFICATION

Page 12, paragraph 4, change as follows:

Fig. 5(1) - 5(5) shows diagrammatically an image generator of the ultrasound system of Fig. 1.

Page 12, paragraph 5, change as follows:

Fig. 5a(1) - 5a(2) shows diagrammatically a control processor of the ultrasound system of Fig. 1.

Page 18, paragraph 2, change as follows:

Figs. 5(1) - 5(5), 5(A)(1) - 5(A)(2) show diagrammatically the imaging system according to a presently preferred embodiment. The entire operation of the imaging system is controlled by a control processor 140, shown in Fig. 5A. Control processor 140 receives input commands from input controls 142 through 167 and provides output control signals 170 through 191. Control processors 140 provides control data to a beamformer 200, and provides image control data to image generator 250, which includes processing and display electronics. Beamformer 200 includes a transmit beamformer 200A and a receive beamformer 200B, shown diagrammatically in Fig. 5B. In general, transmit beamformer 200A and receive beamformer 200B may be analog or digital beamformers as described, for example, in U.S. Patents 4,140,022; 5,469,851; or 5,345,426 all of which are incorporated by reference.

Page 19, paragraph beginning of line 31, change as follows:

Control processor 140 provides delay commands to transmit beamformer channels  $215_1, 215_2, \dots, 215_M$  via a bus  $216_1$ , and also provides delay commands to the intra-group transmit pre-processors  $210_1, 210_2, \dots, 210_M$  via a bus 211. The delay data steers and focuses the generated transmit beams over transmit scan lines of a selected transmit pattern, as shown for example in Figs. 6 through 6C. Control processor 140 also provides delay commands to receive beamformer channels  $225_1, 225_2, \dots, 225_N$  via a bus 226 and delay commands to the intra-group receive pre-processors  $220_1, 220_2, \dots, 220_N$

via a bus 221. The applied relative delays control the steering and focusing of the synthesized receive beams. Each receive beamformer channel 225<sub>i</sub> includes a variable gain amplifier, which controls gain as a function of received signal depth, and a delay element that delays acoustic data to achieve beam steering and dynamic focusing of the synthesized beam. A summing element 230 receives the outputs from beamformer channels 225<sub>1</sub>, 225<sub>2</sub>, ..., 225<sub>N</sub> and adds the outputs to provide the resulting beamformer signal to image generator 250, shown in detail in Fig. 5(1) - 5(5). The beamformer signal represents one receive ultrasound beam synthesized along one receive scan line.

#### REMARKS

The Notice of Omitted Item states that Fig. 5 was omitted from the application as filed. It is noted, however, that Fig. 5, as identified in the specification, should have been Figs. 5(1) - 5(5).

It also noted that Fig. 5A, as identified in the specification, should have been Figs. 5A(1) - 5A(2).

As correctly indicated in the Filing receipt dated September 20, 2001, 34 sheets of drawings were received by the U.S. PTO. Included in these 34 sheets of drawings are Figs. 5(1) - 5(5) and 5A(1) - 5A(2).

The specification has been amended to correct the typographical errors.

The Favorable reconsideration is respectfully requested.

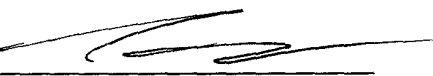
In view of the foregoing amendments and remarks, Applicants



respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached by telephone at the number given below.

Respectfully submitted,

By   
Tony E. Piotrowski, Reg. 42,080  
Attorney  
(914) 333-9609

CERTIFICATE OF MAILING

It is hereby certified that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to:

COMMISSIONER FOR PATENTS  
Washington, D.C. 20231

On Nov. 14, 2001  
By Elsa DeLucy

APPENDIX OF SPECIFICATION AMENDMENTS

Page 12, paragraph 4, change as follows:

Fig. ~~5~~ 5(1) - 5(5) shows diagrammatically an image generator of the ultrasound system of Fig. 1.

Page 12, paragraph 5, change as follows:

Fig. ~~5A~~ 5a(1) - 5a(2) shows diagrammatically a control processor of the ultrasound system of Fig. 1

Page 18, paragraph 2, change as follows:

Figs. ~~5, 5A and 5B~~ 5(1) - 5(5), 5(A)(1) - 5(A)(2) show diagrammatically the imaging system according to a presently preferred embodiment. The entire operation of the imaging system is controlled by a control processor 140, shown in Fig. 5A. Control processor 140 receives input commands from input controls 142 through 167 and provides output control signals 170 through 191. Control processors 140 provides control data to a beamformer 200, and provides image control data to image generator 250, which includes processing and display electronics. Beamformer 200 includes a transmit beamformer 200A and a receive beamformer 200B, shown diagrammatically in Fig. 5B. In general, transmit beamformer 200A and receive beamformer 200B may be analog or digital beamformers as described, for example, in U.S. Patents 4,140,022; 5,469,851; or 5,345,426 all of which are incorporated by reference.

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